

**Risk factors for infection with *Babesia* species in cheetah-breeding centres in South Africa**

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Babesiosis, which occurs world-wide in tropical, subtropical and even temperate regions, is a protozoal infection transmitted through the bite of an ixodid tick. The vector of cheetah-associated *Babesia* species is unknown to date, however, it is assumed to be tick-transmitted. Prevalence of *Babesia* species infection, gender, age and tick burdens of cheetahs were investigated at two cheetah-breeding centres in South Africa. A total of 103 cheetahs were included in the study; blood in EDTA was collected from each animal. The hypervariable V4 region of the 18S rRNA gene of *Babesia* species was amplified by polymerase chain reaction (PCR). Combination of PCR and reverse line blot (RLB) hybridization assay produced 500 bp DNA fragments specific for felid *Babesia* species gene on electrophoresis and revealed that 58% of cheetah blood samples tested positive. A total of 1137 ticks, recovered from cheetahs at both localities, were identified as *Amblyomma hebraeum*, *Haemaphysalis elliptica* and *Rhipicephalus simus* based on morphological features. A multiple logistic regression model showed that cheetahs with high tick burdens were more likely to be infected with *Babesia* species than those with low tick burdens (Odds ratio=32; 95% CI: 6.3, 166;  $P<0.001$ ) and than those with medium tick burdens (OR=12; 95% CI: 2.4, 61;  $P=0.002$ ). Adjusting for tick burden and locality, the risk of infection with *Babesia* species was significantly higher as the cheetahs aged ( $P=0.039$ ). There were no significant effects of gender or locality on the risk of harbouring *Babesia* species. This is the first study to show a strong positive correlation between infection with *Babesia* species in cheetahs and the presence of suspected vector ticks.

**Bluetongue and epizootic hemorrhagic disease in La Réunion; a burden on ruminant farming**

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Since 2002, the livestock of Réunion Island has been subject to reoccurring outbreaks of Bluetongue (BT) and Epizootic Hemorrhage Disease (EHD). To find out a solution to this problem, that can have severe financial implications to ruminant farmers, a study was carried out between March and September of 2011. The aims of this study were: (1) to confirm the circulation of the viral agents in relation to both host reservoirs and insect vectors; (2) to assess the health status of Réunion Island's livestock; and (3) to identify major risk factors pertaining to ruminant farming due to these viruses. A total of 254 cows from 51 farms and 206 sheep and goats were chosen randomly for testing. Multiple blood samples were taken from all sampled animals. Farming procedures and environmental conditions were assessed for each farm via a questionnaire. Any animal exhibiting clinical symptoms of viral infection was also tested. Serology was done using commercially available LSIVET kits, viral detection was performed via RT-PCR and genotyping was performed externally. Logistic regression was used to assess potential risk factors after a first of univariate analysis (Chi<sup>2</sup>). Serology studies suggested that ~50% of ruminants were positive for Bluetongue and ~40% for EHD. EHDV-1 virus was detected in ~5% of animals and bluetongue variant 2 was detected in ~1%. Statistical analysis showed that the major risk factors for Bluetongue and EHD viral infection of ruminant livestock include; the category of the reared livestock, the presence of organic waste, the presence of a water source and the proximity of another farm. Those results are the first step to a better understanding of what could happen in the future in Western Europe.